USER'S MANUAL

10/100/1000Base-T/ SFP to SFP GbE Converter Module

User's Manual

Managed Media Converter
Release 1.0

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Revision History

Release	Date	Revision
1.00	07/20/2009	A1

Caution

Circuit devices are sensitive to static electricity, which can damage their delicate electronics. Dry weather conditions or walking across a carpeted floor may cause you to acquire a static electrical charge.

To protect your device, always:

- Touch the metal chassis of your computer to ground the static electrical charge before you pick up the circuit device.
- Pick up the device by holding it on the left and right edges only.

Electronic Emission Notices

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a class A computing device pursuant to Subpart J of part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

European Community (CE) Electromagnetic Compatibility Directive

This equipment has been tested and found to comply with the protection requirements of European Emission Standard EN55022/EN60555-2 and the Generic European Immunity Standard EN50082-1.

EMC:	EN55022(1988) /CISPR-22(1985)	class B
	EN60555-2(1995)	Class B
	EN60555-3	
	IEC1000-4-2(1995)	4K V CD, 8KV, AD
	IEC1000-4-3(1995)	3V/m
	IEC1000-4-4(1995)	1KV – (power line), 0.5KV – (signal line)

About this user's manual

In this user's manual, it will not only tell you how to install and connect your network system but configure and monitor the MANAGED MEDIA CONVERTER through the built-in console and web by serial interface and Ethernet ports step-by-step. Many explanations in detail of hardware and software functions are shown as well as the examples of the operation for web-based interface and text-based menu-driven console interface.

Overview of this user's manual

- Chapter 1 "Introduction" describes the features of MANAGED MEDIA CONVERTER
- Chapter 2 "Installation"
- Chapter 3 "Operation of Web-based Management"
- Chapter 4 "Operation of Menu-driven Console"
- Chapter 5 "Maintenance"

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1. Introduction

1-1. Overview

The module is designed to make Fiber Gigabit Ethernet conversion between 10/100/1000Base-T (RJ-45) / 1000Base-SX/LX(SFP) dual media to1000Base-SX/LX(SFP). It integrates multiple connection functions in a single converter module: Gigabit copper to fiber; Gigabit multimode to single- mode fiber, Gigabit repeater. In addition, the converter implements jumbo frame forwarding capability. The overall network flexibility is enhanced, and the network efficiency is also improved to accommodate and deliver high bandwidth applications.

The GbE Converter software is designed one image for CO and CPE two roles, the converter firmware is Auto-Detection for CO or CPE role. If the GbE converter be inserted into 16-slots converter chassis it will be a CO converter module automatically, it need to use the management module in the 16-slot chassis to do all managed function. If the GbE converter be inserted into a remote small chassis, it will be a CPE converter automatically, the CPE converter can support Web UI, CLI and SNMP for all managed function.

1-2. Features

The MANAGED MEDIA CONVERTER converter provides the following features for users to perform system network administration.

Management

- Port Status, Counter and Configuration.
- Display the basic System Information on user interface.
- System configuration which includes administrator, guest users and IP address relative to parameters and SNMP basic parameters.
- Maximal packet length can be up to 9600 bytes.
- Bandwidth rating management with a resolution of 1Mbps (Range: 1~1000M) of designated speed.
- Support Link Fault Pass-through.
- Support L2 PDU Forwarding
- Support IEEE 802.1Q VLAN Tag-Based and Double-Tag mode selection
- Broadcasts suppress to avoid for power lost and recovery while a bunch of converter boxes register to NMS simultaneously.
- The trap events alarm can be sent via e-mail.
- A configured setting can be saved into the on-board flash memory. And the current setting can be recovered from the default setting or the previous configured setting.
- On-board diagnostics function can let administrator know the hardware status.
- On-board firmware can be updated via TFTP function.

• The converter allows administrator to reboot system from management station.

• Dying Gasp function can send out an OAM packet, when detects the DC power down.

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1-3. Checklist

Before you start installing the converter, please verify that the package contains the following:

- SNMP-enabled Managed Media Converter
- This User's Manual

Please notify your sales representative immediately if any of the aforementioned items is missing or damaged.

1-4. View of the Converter

Fig. 1-1 MANAGED MEDIA CONVERTER

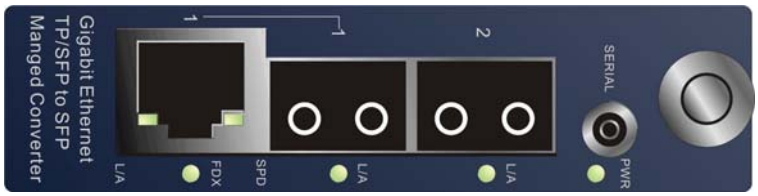

Fig. 1-2 Front View of the MANAGED MEDIA CONVERTER

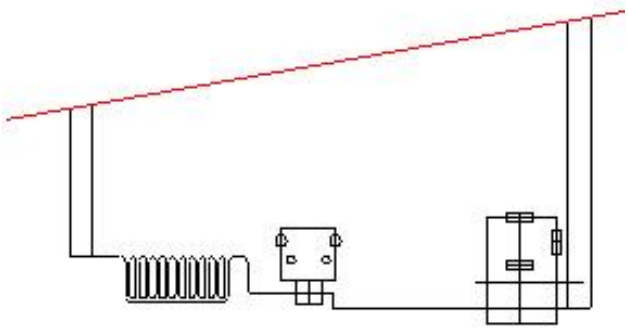

Fig. 1-3 Reset Button and DC-Jack Beside Gold Finger Connector

LED Indicators

LED	Color	Function
PWR	Green	Lit when +5V power is coming up
P2 SFP L/A	Green	Lit when fiber connection is good Blinks when any traffic is present
P1 SFP L/A	Green	Lit when fiber connection is good Blinks when any traffic is present
P1 TP SPD	Green/ Amber	Green Lit when 1000Base-T is active Amber Lit when 100Base-TX is active OFF: when 10Base-T is active
P1 TP L/A	Green	Lit when TP connection is good Blinks when any traffic is present
P1 FDX/COL	Amber	Lit when P1 full-duplex mode is active or TP Collision happens in half-duplex mode

Table 1-1

2. Installation

2-1. Cable and Hardware Installation

⇒ Wear a grounding device for electrostatic discharge

⇒ Verify that the AC-DC adapter conforms to your country AC power requirement and then insert the power plug

• TP Cable

⇒ Use Cat. 5 TP cable to connect server/host or workstation to TP port of the converter

⇒ TP port supports MDI/MDI-X auto-crossover, use:

— straight-through cable (Cable pin-outs for RJ-45 jack 1, 2, 3, 6 to 1, 2, 3, 6) to cascade or up-link the converter to an upper layer L2/L3 switch or server/host/workstation

⇒ TP Cable Limitations: Cat. 5 and up to 100m

• Fiber Cable

⇒ Use fiber cable to connect SFP port of an upper layer converter

⇒ Fiber Cable

62.5/125μm, 50/125μm multi-mode

9/125μm single-mode

⇒ SFP Transceiver Description:

Model	Description
SFP.LC	1000Mbps LC, Multi-Mode, SFP Fiber transceiver
SFP.LC.S10	1000Mbps LC, 10km, SFP Fiber transceiver
SFP.LC.S30	1000Mbps LC, 30km, SFP Fiber transceiver
SFP.LC.S50	1000Mbps LC, 50km, SFP Fiber transceiver
SFP.BL5.S10	1000Mbps BiDi-LC, 10km, 1550nm SFP Fiber transceiver
SFP.BL3.S10	1000Mbps BiDi-LC, 10km, 1310nm SFP Fiber transceiver
SFP.BL5.S20	1000Mbps BiDi-LC, 20km, 1550nm SFP Fiber transceiver
SFP.BL3.S20	1000Mbps BiDi-LC, 20km, 1310nm SFP Fiber transceiver

Table 2-1

Note: The other side of the fiber cable plugged into the converter's RX connector at the near end should plug into the FX device's TX connector at the far end, and vice versa.

- **Hardware Installation**

⇒ Insert the GbE converter module into 16-slot chassis for CO site application

Fig. 2-1

⇒ Insert the GbE converter module into 1-slot remote chassis for CPE site application

Fig. 2-2

2-2. Management Station Installation

MANAGED MEDIA CONVERTER converter is equipped with the serial port (Phone Jack), Ethernet 10/100 TP port and Ethernet 100FX port. The users can use any port to access and set up system configuration of MANAGED MEDIA CONVERTER converter. Or users can access this converter by TP port. But users need to enable TP management for network management access (See Fig. 2-2). And the factory default Ipaddress setting is:

IP = 192.168.1.1

Subnet Mask = 255.255.255.0

Gateway = 192.168.1.254

ID/PW = admin / admin

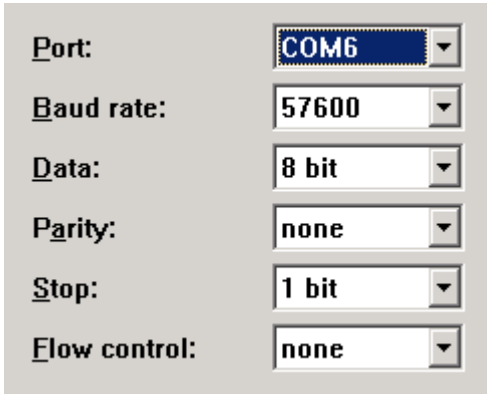

Fig. 2-3

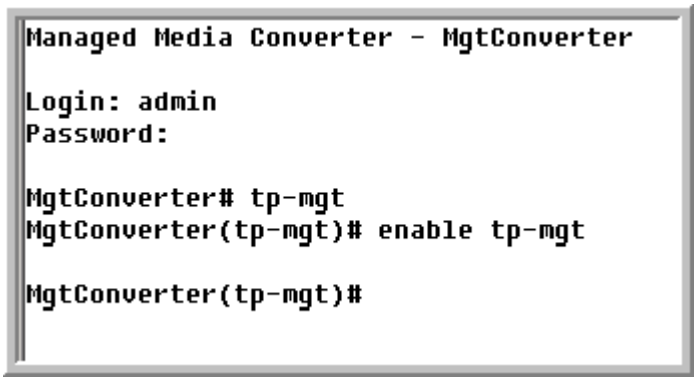

Fig. 2-4

```
MgtConverter# help
Commands available:
  ------------<< Local commands >>------------
  account               Enter into account mode
  alarm                 Enter into alarm mode
  autologout            Change autologout time
  bandwidth             Enter into bandwid
  config-file           Enter into config file mode
  dhcp-boot             Enter into DHCP-boot mode
  diag                  Enter into diag mode
  firmware              Enter into firmware mode
  hostname              Change hostname
  ip                    Enter into IP mode
  l2pdu-forwarding      Enter into L2 PDU Forwarding mode
  lfp                   Enter into Link Fault Passthrough mode
  log                   Enter into log mode
  max-pkt-len           Enter into max packet length mode
  port                  En
  reboot                Reboot the system
  snmp                  Enter into SNMP mode
  system                Enter into system mode
  tftp                  Enter into TFTP mode
  time                  Enter into time mode
  tp-mgt                Enter into TP Port Management mode
  vlan                  Enter into VLAN mode
...(q to quit)
  ------------<< Global commands >>------------
  end                   Back to the top mode
  exit                  Back to the previous mode
  help                  Show available co
  history               Show a list of previously run commands
  logout                Logout the system
  restore default       Restore default config
  restore user          Restore user config
  save start            Save as start config
  save user             Save as user config
```

Fig. 2-5 Type “help” can show all CLI commands

3. Operation of Web-based Management

1. The converter provides a web function by Ethernet Port (Browser) to manage and monitor the port activity. If you need to change the IP address at the first time, you can use the console to modify and also refer to Chapter 4 for more details.

   The default values of MANAGED MEDIA CONVERTER converter are as follows:
   IP Address :192.168.1.1
   Subnet Mask :255.255.255.0
   Default Gateway :192.168.1.254
   Username :admin
   Password :admin

2. After the converter had been configured via the console, you can browse it. For instance, http://192.168.1.1, then enter the username and password as above. Both of the default username and password are “admin”.

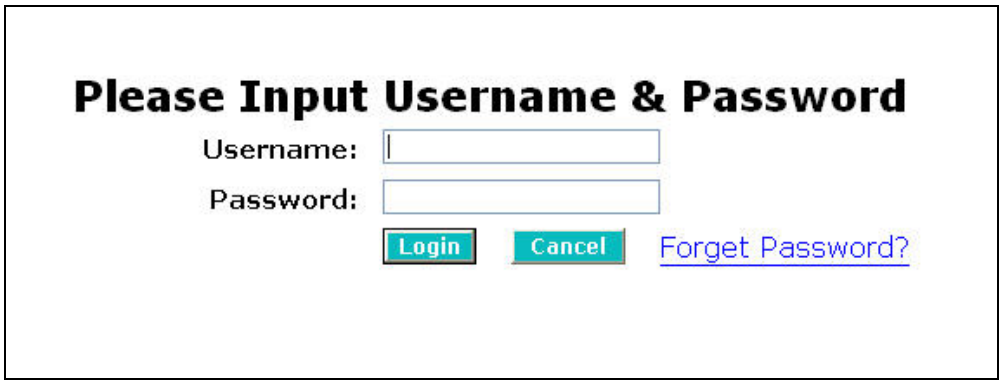

Fig. 3-1

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3-1. Web Management Home Overview

Home Page and Main MENU will be shown up after you fill in “admin” to serve as username as well as password and click the <Login> button. The main functions will be listed on the left side of a browser. On the top is the front panel view of the converter. In the middle is the basic System Information. The main functions will be introduced in the following sections.

On the front panel, the LEDs will display the status color which is the same as physical hardware. The fiber and TP plug will display the status color as well. Green stands for “connected” status and red stands for “disconnected” one.

The main functions are “Port Status and Counter”, “System Information”, “Configuration”, “Diagnostics”, “Show Log Data”, “Software Upgrade”, “Reboot” and “Logout”.

Function name:

System Information

Function description:

Show the basic system information.

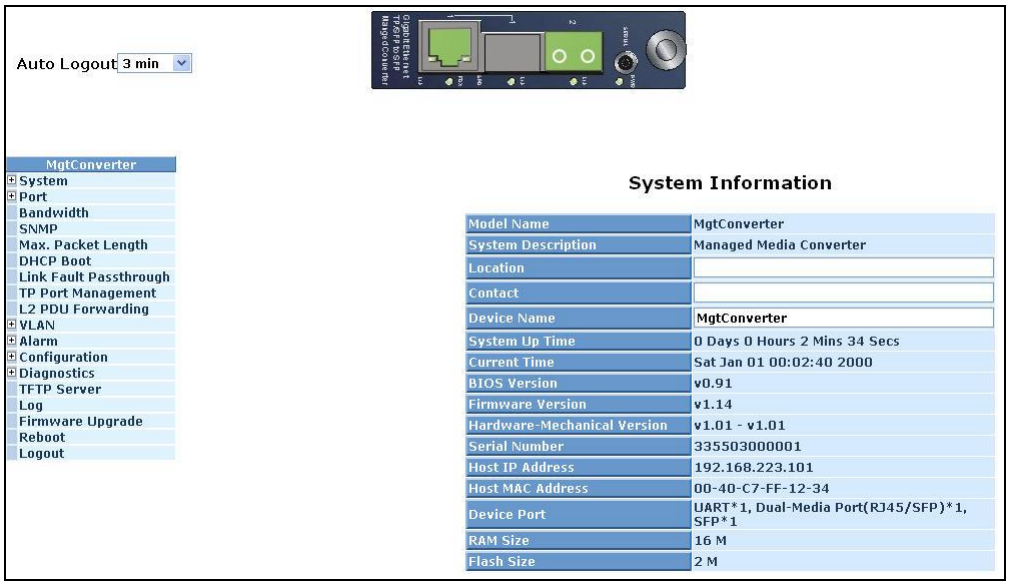

Fig. 3-2

Parameter description:

Model Name:

The model name of this product.

System Description:

Managed Media Converter

Location:

Basically, it is the location where this converter is put. User-defined.

Contact:

Basically, it is the contact window in charge of the maintenance of this converter. User-defined.

System Up Time:

The time accumulated since this converter is powered up. Its format is day, hour, minute, second.

Current Time:

Show the system time of MANAGED MEDIA CONVERTER. Its format: day of week, month, day, hours : minutes : seconds, year. For instance, Wed, Apr. 06, 12:10:10, 2004.

BIOS Version:

The version of the BIOS in this device.

Firmware Version:

The firmware version in this device.

Hardware-Mechanical Version:

The version of Hardware and Mechanical. The figure before the hyphen is the version of electronic hardware; the one after the hyphen is the version of mechanical.

Serial number:

The serial number is assigned by the manufacturer.

Host IP address:

The IP address of the device.

Host MAC address:

It is the Ethernet MAC address of the management agent in this device.

Device Port:

Show all types and numbers of the port in the device.

RAM size:

The size of the DRAM in this device.

Flash size:

The size of the flash memory in this device.

3-2. The Function Tree in Web Management

For offering you a clear guide to use this Managed Media Converter, the following is the whole function tree of MANAGED MEDIA CONVERTER in web management. User can refer to the following sections based on the order of this function tree below for more details.

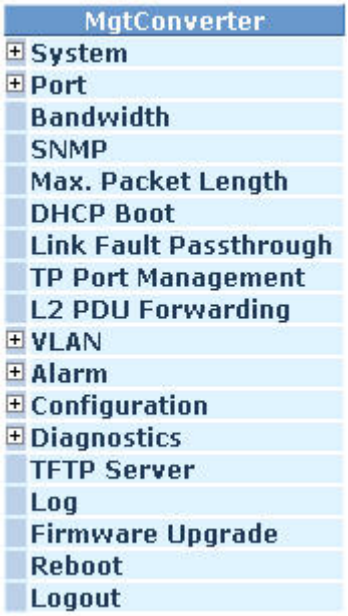

Fig. 3-3 Main menu

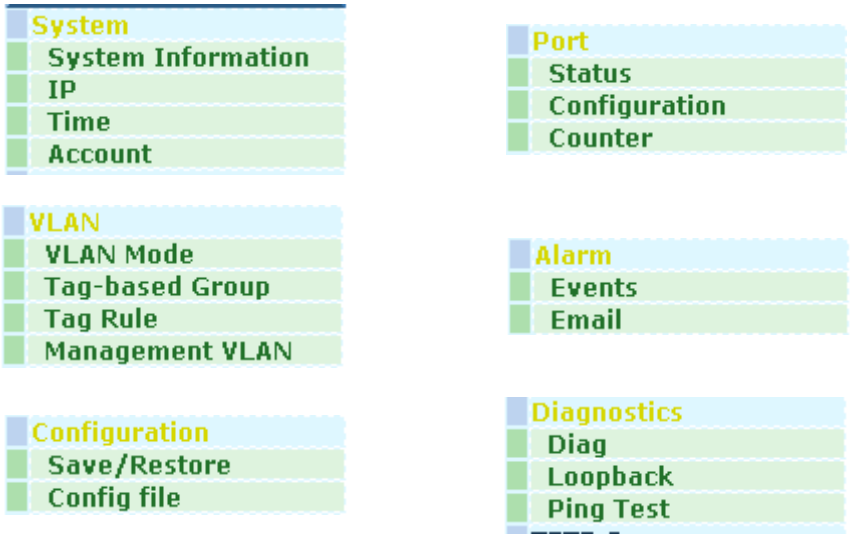

Fig. 3-4 Sub-menu

3-3. IP Configuration

IP configuration is one of the most important configurations in MANAGED MEDIA CONVERTER. Without the proper setting, network manager will not be able to see the device. MANAGED MEDIA CONVERTER supports both manual IP address setting and automatic IP address setting via DHCP server. When IP address is changed, you must reboot the converter to have the setting taken effect and use the new IP to browse for web management and telnet console management.

Function name:

IP Configuration

Function description:

Set IP address, subnet mask, default gateway and DNS for MANAGED MEDIA CONVERTER.

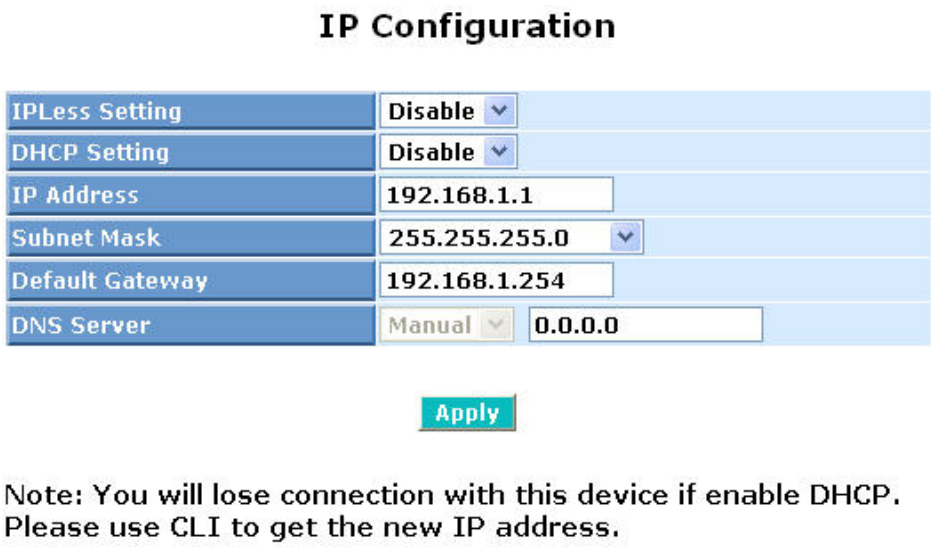

Fig. 3-5

Parameter description:

IP Less Setting:

Disable (Default):

When IP Less function is disabled, the remote device will be in IP mode. User can manage the remote device via fiber port or TP port in this mode.

Enable:

When IP Less function is enabled, it will not allow managing the remote device in IP mode. The remote device only can be managed through the 802.3ah OAM packets transmitted from the fiber port of Chasis module.

Note: If the remote device is in IP mode, the color of the slot you clicked will become yellow; otherwise it will become gray if the remote device is in IP Less mode.

DHCP:

MANAGED MEDIA CONVERTER supports DHCP client used to get an IP address automatically if you set this function “Enable”. MANAGED MEDIA CONVERTER will find the DHCP server existed in the network to get an IP address. If DHCP server is down or does not exist and DHCP in MANAGED MEDIA CONVERTER is enabled, then MANAGED MEDIA CONVERTER will count down 60 seconds and use its fixed IP set last time. If this function is set “Disable”, you have to input IP address manually.

Default: Disable

IP address:

Users can configure the IP settings and fill in new values if users set the DHCP function “Disable”. Then, click **<Apply>** button to update it.

Default: 192.168.1.1

Subnet mask:

Set the subnet mask value which is the same as that of network it attaches. For more information, please also see the section “IP Address Assignment” in this manual.

Default: 255.255.255.0

Default gateway:

Set an IP address for a gateway to handle those packets that do not meet the rules predefined in a device. If a packet does not meet the criteria for other routers, then it must be sent to a default router. This means any packet with undefined TCP/IP information will be sent to this device unconditionally.

Default: 192.168.1.253

DNS:

Set an IP address for a Domain Name Server. The MANAGED MEDIA CONVERTER DNS client program will ask the Domain Name Server to resolve the IP address of the named host. To select the “Manual” for fixed DNS IP address setting. To select “Auto” the DNS IP address will be assigned from DHCP server. The default DNS setting is empty.

Default: DNS : -----

3-4. Time Configuration

The switch provides manual and automatic ways to set the system time via NTP. Manual setting is simple and you just input “Year”, “Month”, “Day”, “Hour”, “Minute” and “Second” within the valid value range indicated in each item. If you input an invalid value, for example, 61 in minute, the switch will clamp the figure to 59.

NTP is a well-known protocol used to synchronize the clock of the switch system time over a network. NTP, an internet draft standard formalized in RFC 1305, has been adopted on the system is version 3 protocol. The switch provides four built-in NTP server IP addresses resided in the Internet and a user-defined NTP server IP address. The time zone is Greenwich-centered which uses the expression form of GMT+/- xx hours.

Function name:

Time

Function description:

Set the system time by manual input or set it by syncing from Time servers. The function also supports daylight saving for different area’s time adjustment.

Parameter description:

Current Time:

Show the current time of the system.

Manual:

This is the function to adjust the time manually. Filling the valid figures in the fields of Year, Month, Day, Hour, Minute and Second respectively and press **<Apply>** button, time is adjusted. The valid figures for the parameter Year, Month, Day, Hour, Minute and Second are >=2000, 1-12, 1-31, 0-23, 0-59 and 0-59 respectively. Input the wrong figure and press **<Apply>** button, the device will reject the time adjustment request. There is no time zone setting in Manual mode.

Default: Year = 2000, Month = 1, Day = 1
Hour = 0, Minute = 0, Second = 0

NTP:

NTP is Network Time Protocol and is used to sync the network time based Greenwich Mean Time (GMT). If use the NTP mode and select a built-in NTP time server or manually specify an user-defined NTP server as well as Time Zone, the switch will sync the time in a short after pressing **<Apply>** button. Though it synchronizes the time automatically, NTP does not update the time periodically without user’s processing.

Time Zone is an offset time off GMT. You have to select the time zone first and then perform time sync via NTP because the switch will combine this time zone offset and updated NTP time to come out the local time,

otherwise, you will not able to get the correct time. The switch supports configurable time zone from –12 to +13 step 1 hour.

Default Time zone: +8 Hrs.

Daylight Saving:

Daylight saving is adopted in some countries. If set, it will adjust the time lag or in advance in unit of hours, according to the starting date and the ending date. For example, if you set the day light saving to be 1 hour. When the time passes over the starting time, the system time will be increased one hour after one minute at the time since it passed over. And when the time passes over the ending time, the system time will be decreased one hour after one minute at the time since it passed over.

The switch supports valid configurable day light saving time is –5 ~ +5 step one hour. The zero for this parameter means it need not have to adjust current time, equivalent to in-act daylight saving. You don't have to set the starting/ending date as well. If you set daylight saving to be non-zero, you have to set the starting/ending date as well; otherwise, the daylight saving function will not be activated.

Default for Daylight Saving: 0.

The following parameters are configurable for the function Daylight Saving and described in detail.

Day Light Saving Start :

This is used to set when to start performing the day light saving time.

Mth:

Range is 1 ~ 12.

Default: 1

Day:

Range is 1 ~ 31.

Default: 1

Hour:

Range is 0 ~ 23.

Default: 0

Day Light Saving End:

This is used to set when to stop performing the daylight saving time.

Mth:

Range is 1 ~ 12.

Default: 1

Day:

Range is 1 ~ 31.

Default: 1

Hour:

Range is 0 ~ 23.

Default: 0

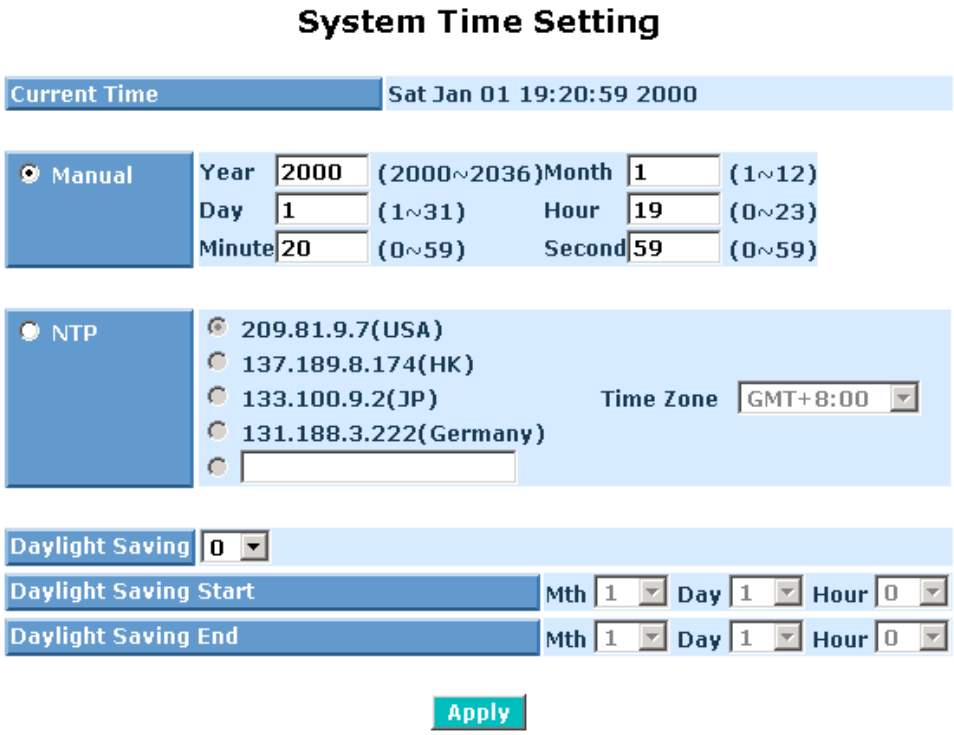

Fig. 3-6

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3-5. Account Configuration

In this function, only administrator can create, modify or delete the username and password. Administrator can modify other guest identities' password without confirming the password but it is necessary to modify the administrator-equivalent identity. Guest-equivalent identity can modify his password only. Please note that you must confirm administrator/guest identity in the field of Authorization in advance before configuring the username and password. Only one administrator is allowed to exist and unable to be deleted. In addition, up to 4 guest accounts can be created.

The default setting for user account is:

Username : admin

Password : admin

The default setting for guest user account is:

Username : guest

Password : guest

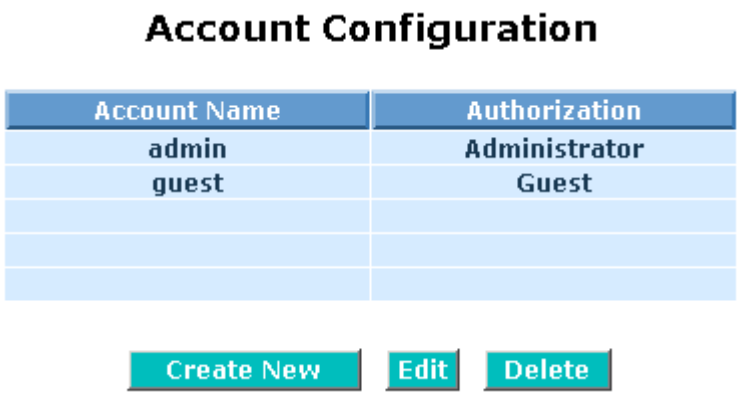


Fig. 3-7

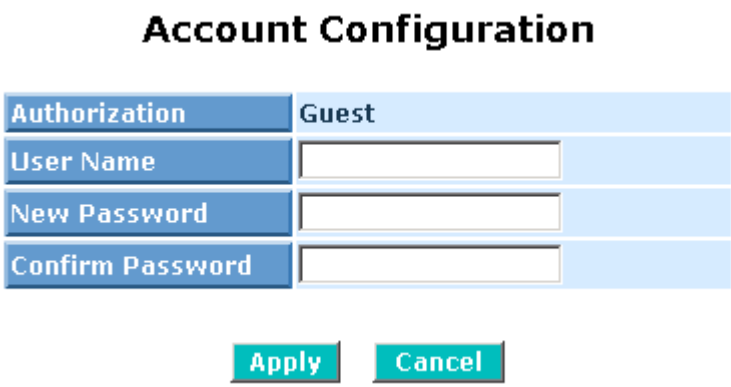


Fig. 3-8 New Account

3-6. Port Current Status

Function name:

Port Current Status

Function description:

Display the current port status of MANAGED MEDIA CONVERTER.

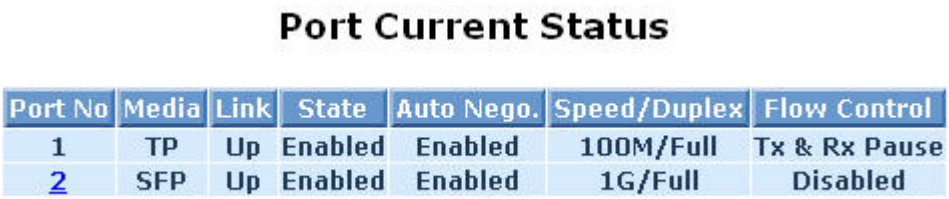


Fig. 3-9

Parameter description:

Port:

Display TP / SFP port. The TP Port is MANAGED MEDIA CONVERTER's Ethernet 10/100/1000Mbps UTP interface. The SFP Port is MANAGED MEDIA CONVERTER's Ethernet 100Mbps Fiber interface.

Link Status: UP, Down

Show if the link on the port is active. If the link is connected to a working well device, the Link will show the link "Up", otherwise, "Down". This is determined by the negotiation of hardware.

Port State:

Show if the communication capability of the port is Enabled or Disabled. When enabled, traffic can be transmitted and received via this port. When disabled, no traffic can be transferred through this port. Port State is configured by user. Default is Enabled.

Auto Negotiation:

Show the exchange mode of Ethernet MAC. There are two modes supported in MANAGED MEDIA CONVERTER. They are auto-negotiation mode "Enabled" and forced mode "Disabled". When in "Enabled" mode, this function will automatically negotiate by hardware itself and exchange each other the capability of speed and duplex mode with other site which is linked, and come out the best communication way. When in "Disabled" mode, both parties must have the same setting of speed and duplex, otherwise, both will not be linked. In this case, the link result is "Down".

Default: TP port is Enabled mode, Fiber port is Disabled mode

Speed/Duplex Mode:

Display the speed and duplex of all port. There are three speeds 10Mbps,

100Mbps and 1000Mbps supported in MANAGED MEDIA CONVERTER. The duplex supported is half duplex and full duplex. The status of speed/duplex mode is determined by 1) the negotiation of both local port and link partner in “Enabled” mode or 2) user setting in “Disabled” mode. The local port has to be preset its capability.

In TP port is supported Gigabit Ethernet with TP media, so the result will show 1G/Full duplex, 100M/Full duplex, 100M/Half duplex, 10M/Full duplex and 10Mbps/Half duplex.

In SFP port is supported Gigabit Ethernet with Fiber media, so the result will show 1G/Full duplex only.

Default: TP port: None, depends on the result of the negotiation

SFP port: 1G/Full duplex

Flow Control: Disabled, Tx Pause, Rx Pause or Tx & Rx Pause

Show each port’s flow control status. There are two types of flow control in Ethernet, Backpressure for half-duplex operation and Pause flow control (IEEE802.3x) for full-duplex operation. MANAGED MEDIA CONVERTER supports both of them. The current flow control status could be one of “Disabled”, “Tx Pause”, “Rx Pause” or “Tx & Rx Pause”.

3-7. Port Configuration

Function name:

Port Configuration

Function description:

Change the state and configuration of each port.

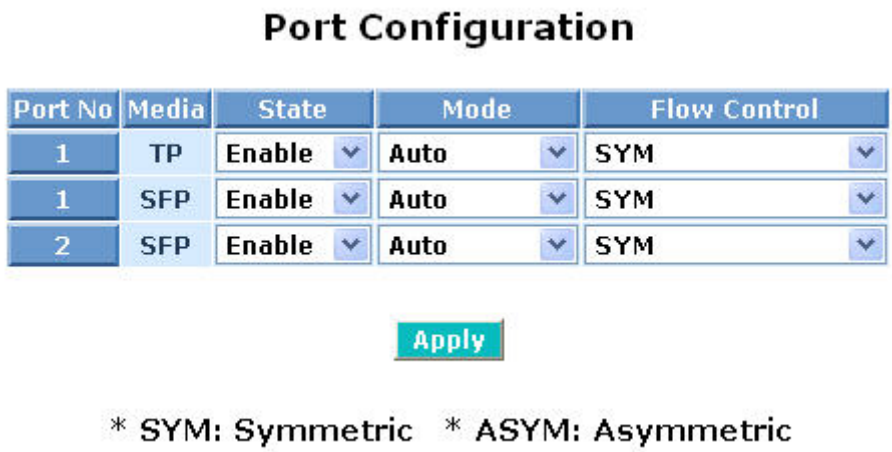


Fig. 3-10

Parameter description:

Port:

The TP and SFP Port 1 is MANAGED MEDIA CONVERTER's Ethernet UTP/SFP Dual media (Combo) interface.

The SFP Port 2 is MANAGED MEDIA CONVERTER's Ethernet Fiber interface.

Port State:

Show if the communication capability of the port is Enabled or Disabled. When enabled, traffic can be transmitted and received via this port. When disabled, the port is blocked and no traffic can be transferred through this port. Port State is configured by the user. Only two states "Enable" and "Disable" are able to be chosen. If you set a port's State "Disable", then that port is prohibited from passing any traffic, even it looks Link up. Default is Enable.

Mode:

Only "Enable" and "Disable" two states can be chosen. "Enable" means the port adopted the auto-negotiation algorithm to exchange the capability with the linked partner. When enabled, the speed, duplex mode and flow control mode may change. "Disable" means the forced mode is adopted. When disabled, if you want to set up a connection successfully, you must have both port configuration of local port and linked partner be

the same. If their configuration is different, the link will not be set up successfully. In MANAGED MEDIA CONVERTER, fiber port supports forced mode only.

Set the mode of speed and duplex. In speed, 10/100Mbps baud rate is available for Fast Ethernet. If the media is fiber, it is always 100Mbps and the duplex is half / full-duplex; if the media is TP, the Speed/Duplex is comprised of the combination of speed mode, 10/100Mbps, and duplex mode, full duplex and half duplex.

Flow Control:

Show each port's flow control status. There are two types of flow control in Ethernet, Backpressure for half-duplex operation and Pause flow control (IEEE802.3x) for full-duplex operation. MANAGED MEDIA CONVERTER supports both of them. If flow control is set Symmetric, both parties can send PAUSE frame to the transmitting device(s) if the receiving port is too busy to handle. When it is set Asymmetric, this will let the receiving port care the PAUSE frame from transmitting device(s), but it doesn't send PAUSE frame. This is one-way flow control. The flow control setting could be one of "Disabled", "SYM", ASYM (Tx) and SYM&ASYM (Rx). Default: SYM

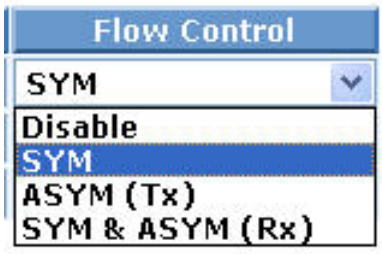


Fig. 3-11

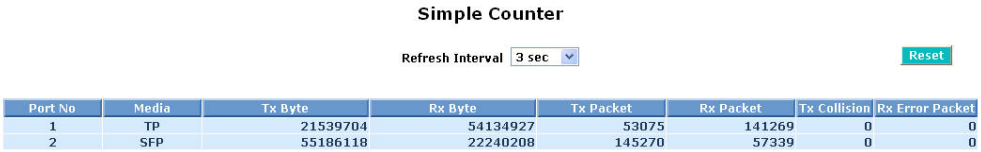
3-8. Port Counter

Function name:

Port Counter

Function description:

Display the counting of each port's traffic, sorted according to the items described in the parameter description.



Port No	Media	Tx Byte	Rx Byte	Tx Packet	Rx Packet	Tx Collision	Rx Error Packet
1	TP	21539704	54134927	53075	141269	0	0
2	SFP	55186118	22240208	145270	57339	0	0

Fig. 3-12

Parameter description:

Refresh Interval:

A Refresh Interval selection list on the web is used to set or change web view counters refresh period. It can be set from 3 seconds to 10 seconds.

TP/SFP Port (Port 1):

Ethernet 10/100/1000Mbps UTP/SFP dual media interface of MANAGED MEDIA CONVERTER.

SFP Port (Port 2):

Ethernet 1000Mbps Fiber interface of MANAGED MEDIA CONVERTER.

Tx Byte Counter:

Total transmitted bytes.

Rx Byte Counter:

Total received bytes.

Tx Packet Counter:

The counting number of the packet transmitted.

Rx Packet Counter:

The counting number of the packet received.

TX Collision Counter:

Collision times.

Rx Error Packet Counter:

The counting number of the received packets which are treated as bad.

3-9. Bandwidth Management Configuration

Function name:

Bandwidth Management Configuration

Function description:

Bandwidth Management function is used to set up the limit of Ingress and Egress bandwidth for all port.

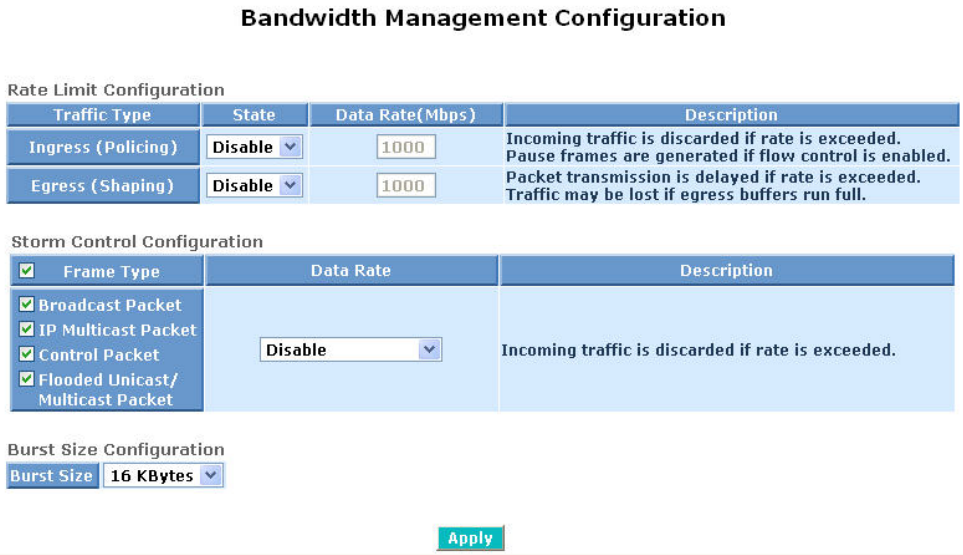


Fig. 3-13

Parameter description:

Rate Limit Configuration:

Ingress (Policy):

State:

There are two states “Enable” and “Disable” for ingress traffic rate limited state setting. Default: Disable

Data Rate (Mbps):

The data rate setting is for ingress traffic rate limited. The unit is Mbps, range is 1~1000. Incoming traffic is discarded if rate is exceeded. Pause frames are generated if flow control is enabled. The default will be 1Mbps when the ingress state set to enable.

Egress (Shaping):

State:

There are two states “Enable” and “Disable” for Egress traffic rate limited state setting. Default: Disable

Data Rate (Mbps):

The data rate setting is for egress traffic rate limited. The unit is

Mbps, range is 1~1000. Packet transmission is delayed if rate is exceeded. Traffic may be lost if egress buffers run full. The default will be 1Mbps when the egress state set to enable.

Storm Control Configuration:

Set up the limit rate of Ingress storming packets. Incoming storming traffic will be discarded if the rate exceeds the value you set up in Data Rate field. The GbE converter support four storming frame type for incoming classification. The device manager can select one or all of frame type, then select (1/2, 1/4, 1/8, 1/16) ingress rate for incoming storming packets rate limit.

Frame Type:

Broadcast Packet:

Data-link broadcasts are sent to all hosts attached to a particular physical network. The broadcast packet destination MAC address: FF-FF-FF-FF-FF-FF.

IP Multicast Packet:

Network layer IP multicast packets are sent to multiple hosts attached to a particular logical network. IP Multicast Addresses Multicast addresses specify an arbitrary group of IP hosts that have joined the group and want to receive traffic sent to this group. The Internet Assigned Numbers Authority (IANA) controls the assignment of IP multicast addresses. It has assigned the old Class D address space to be used for IP multicast. This means that all IP multicast group addresses will fall in the range of 224.0.0.0 to 239.255.255.255

Control Packet:

Such as BPDU, IGMP, ARP, GVRP, …

Flooded Unicast/ Multicast Packet:

Flooded unicast packet:

That destination MAC address of the packet is not in the L2 forwarding table of the switch.

Multicast packet:

The common IANA's range for L2 multicast addresses, which is from 01-00-5E-00-00-00 to 01-00-5E-FF-FF-FF.

Data Rate:

There is 1/2, 1/4, 1/8, 1/16 ingress rate and Disable parameters for data rate selection. Default: Disable

Fig. 3-14

Burst Size Configuration:

It can adjust the burst size in the rate limit configuration according to different packet size traffic application for rate limit performance fine tune.

Burst Size:

There is 4K, 8K, 16K and 32KBytes parameters for burst size selection. Default: 16 KBytes

Fig.3-15

3-10. SNMP Configuration

Any Network Management System (NMS) running the Simple Network Management Protocol (SNMP) can manage the Managed devices equipped with SNMP agent, provided that the Management Information Base (MIB) is installed correctly on the managed devices. The SNMP is a protocol that is used to govern the transfer of information between SNMP manager and agent and traverses the Object Identity (OID) of the management Information Base (MIB), described in the form of SMI syntax. SNMP agent is running on the switch to response the request issued by SNMP manager.

Basically, it is passive except issuing the trap information. The switch supports a switch to turn on or off the SNMP agent. If you set the field SNMP "Enable", SNMP agent will be started up. All supported MIB OIDs, including RMON MIB, can be accessed via SNMP manager. If the field SNMP is set "Disable", SNMP agent will be de-activated, the related Community Name, Trap Host IP Address, Trap and all MIB counters will be ignored.

Function name:

SNMP Configuration

Function description:

This function is used to configure SNMP settings, community name, trap host and public traps as well as the throttle of SNMP. A SNMP manager must pass the authentication by identifying both community names, and then it can access the MIB information of the target device. So, both parties must have the same community name. Once completing the setting, click **<Apply>** button, the setting takes effect.

Parameters description:

SNMP:

The term SNMP here is used for the activation or de-activation of SNMP. Default is Enable.

Get/Set/Trap Community:

Community name is used as password for authenticating if the requesting network management unit belongs to the same community group. If they both don't have the same community name, they don't belong to the same group. Hence, the requesting network management unit can not access the device with different community name via SNMP protocol; if they both have the same community name, they can talk each other.

Community name is user-definable with a maximum length of 15 characters and is case sensitive. There is not allowed to put any blank in the community name string. Any printable character is allowable.

The community name for each function works independently. Each function has its own community name. Say, the community name for GET only works for GET function and can't be applied to other function such as SET and Trap.

Default SNMP function : Enable

Default community name for GET: public

Default community name for SET: private

Default community name for Trap: public

Default Set function : Enable

Default trap host IP address: 0.0.0.0

Default port number :162

Trap:

In the switch, there are 6 trap hosts supported. Each of them has its own community name and IP address; is user-definable. To set up a trap host means to create a trap manager by assigning an IP address to host the trap message. In other words, the trap host is a network management unit with SNMP manager receiving the trap message from the managed switch with SNMP agent issuing the trap message. 6 trap hosts can prevent the important trap message from losing.

For each public trap, the switch supports the trap event Cold Start, Warm Start, Link Down, Link Up and Authentication Failure Trap. They can be enabled or disabled individually. When enabled, the corresponded trap will actively send a trap message to the trap host when a trap happens. If all public traps are disabled, no public trap message will be sent. As to the Enterprise (no. 6) trap is classified as private trap, which are listed in the Trap Alarm Configuration function folder.

Default for all public traps: Enable.

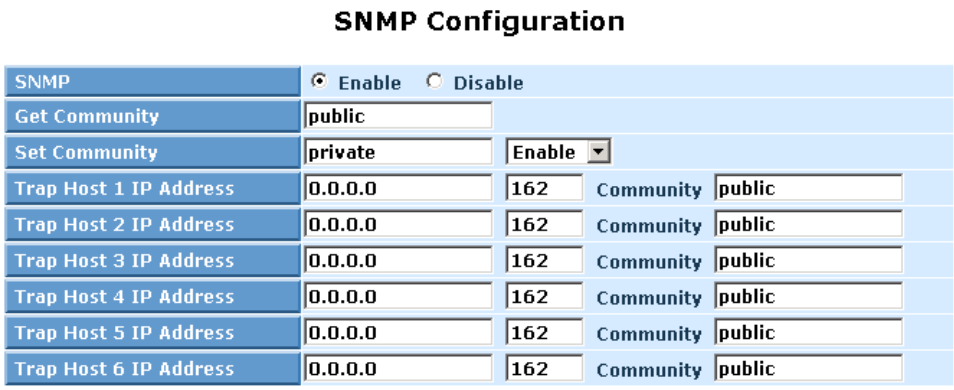


Fig. 3-16 Community and trap host setting

3-11. Max. Packet Length

Function name:

Max. Packet Length

Function description:

To set the maximum packet length for passing this converter.

Fig. 3-17

Parameter description:

Packet Length:

1522, 1536 and 9600 bytes.

Default: 1522 bytes

3-12. DHCP Boot

The DHCP Boot function is used to spread the request broadcast packet into a bigger time frame to prevent the traffic congestion due to broadcast packets from many network devices which may seek its NMS, boot server, DHCP server and many connections predefined when the whole building or block lose the power and then reboot and recover. At this moment, a bunch of switch or other network device on the LAN will try its best to find the server to get the services or try to set up the predefined links, they will issue many broadcast packets in the network.

The switch supports a random delay time for DHCP and boot delay for each device. This suppresses the broadcast storm while all devices are at booting stage in the same time. The maximum user-defined delay time is 30 sec. If DHCP Broadcasting Suppression function is enabled, the delay time is set randomly, ranging from 0 to 30 seconds, because the exactly delay time is computed by the switch itself. The default is “Disable”.

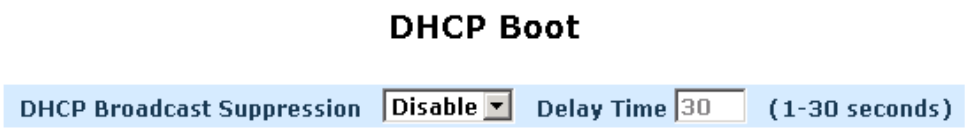


Fig. 3-18

3-13. Link Fault Pass Through

Function name:

Link Fault Passthrough

Function description:

Link Fault Passthrough is a troubleshooting feature that allows the media converter to monitor both the fiber and copper RX ports for loss of signal. In the event of a loss of RX signal on one media port, the converter will automatically disable the TX signal of the other media port, thus "passing through" the link loss. The upper layer switch or router could know the converter channel link down via converter LFP function.

Fig. 3-19

Parameter description:

LFP Mode:

To switch Link Fault Pass Through mode.

Default: Disable

3-14. TP Port Management

Function name:

TP Port Management

Function description:

Users can turn on or off the management access from TP/SFP port 1, it is connect to remote user device interface in normally, so that is for security reason to disable the GbE converter management traffics incoming from port 1.

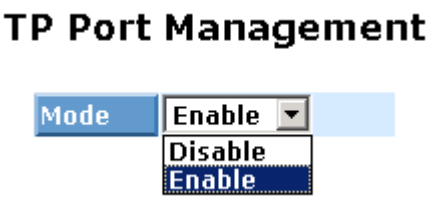


Fig. 3-20

Parameter description:

Mode:

To switch TP Port Management mode.

Default: Disable

Note: Because the default setting is disabled, you need to turn this on by serial console interface at the first time.

3-15. L2 PDU Forwarding

Function name:

L2 PDU Forwarding

Function description:

The GbE converter is bridge based. It can simulate a pure converter to forward L2 PDU packets when the L2PDU Forwarding was enabled. L2 PDU: such as STP BPDU, LACP PDU, GVRP, …

Fig. 3-21

Parameter description:

Mode:

To forward L2 PDU mode.

Default: Disable

3-16. VLAN

Function name:

VLAN Mode

Function description:

The Tag-based and Double-tag mode is based on IEEE802.1Q VLAN. The media converter can create up to 512 VLAN groups.

Fig. 3-22

Parameter description:

VLAN Mode:

To switch VLAN mode. Disable, Tag-based and Double-tag.

Default: Disable

Up-link Port:

The Up-link port is for Q-in-Q VLAN application, it is based VLAN mode setting = double-tag. The double-tag mode is based on IEEE 802.1Q. The *upstream traffic* egress from the uplink port will be add the second layer VLAN tag. The ingress port PVID will be the second layer tag VLAN ID. The first layer VLAN tag will be keep in the double-tag frame without any change. The *downstream traffic* ingress to uplink port, the outer layer VLAN tag will be removed, then it will be forwarded to other egress port.

Default: Port 2

Fig. 3-23

Function name:

Tag-based Group

Function description:

To add/modify/remove allowed VLAN groups for this converter. Maximum is 512 VLAN groups.

Fig. 3-24

Parameter description:

VLAN Name:

Assign a readable VLAN name for the new VLAN group. The default VLAN VID 1 group will be ready, when you select Tag-based VLAN mode.

VID:

VLAN ID Range is 1~4094

Default VID: 1

Note: Under Tag-based mode, only the traffic of vlan groups configured here can pass the converter.

Function name:

VLAN Tag Rule

Function description:

Supports PVID for ingress un-tagged frames a default VLAN ID. The “Tag” and “UnTag” setting is for the port egress rule for out going traffic whether the port sends out frames with VLAN tag or without VLAN tag.

Fig. 3-25

Parameter description:

PVID:

Any untagged packet will be adding this vlan tag on.

TP/Fiber Tag:

Disable:

Out going packet will keep their original tag status.

Enable:

Out going packet will have a vlan tag. The untagged packet will be added a tag with PVID.

Function name:

Management VLAN

Function description:

To assign a specific VLAN group for management purpose, it can isolate the management traffic and data service to enhance management network security.

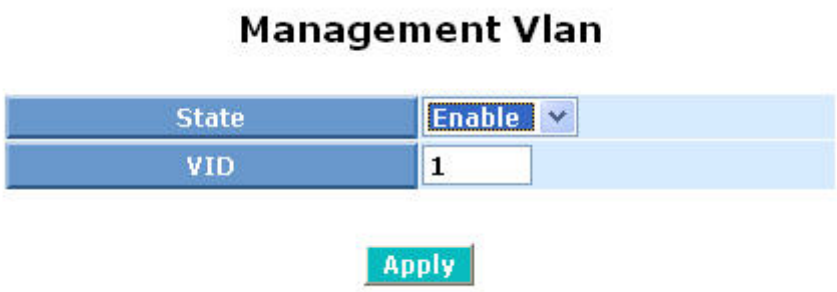


Fig. 3-26

Parameter description:

State:

To enabled/disable this feature.

VID:

Specific Management VLAN ID, from 1-4094.

Note: If enabled, only the traffic belong to the specific vlan can access this converter.

3-17. Alarm Configuration

Function name:

Events Configuration

Function description:

The Trap Events Configuration function is used to enable the switch to send out the trap information while pre-defined trap events occurred. The switch offers different trap events to users for switch management. The trap information can be sent by email and SNMP trap. The message will be sent while users tick (☑) the trap event individually on the web page shown as below.

Parameter description:

Trap: Cold Start, Warm Start, Link Down, Link Up, Authentication Failure, User login, User logout

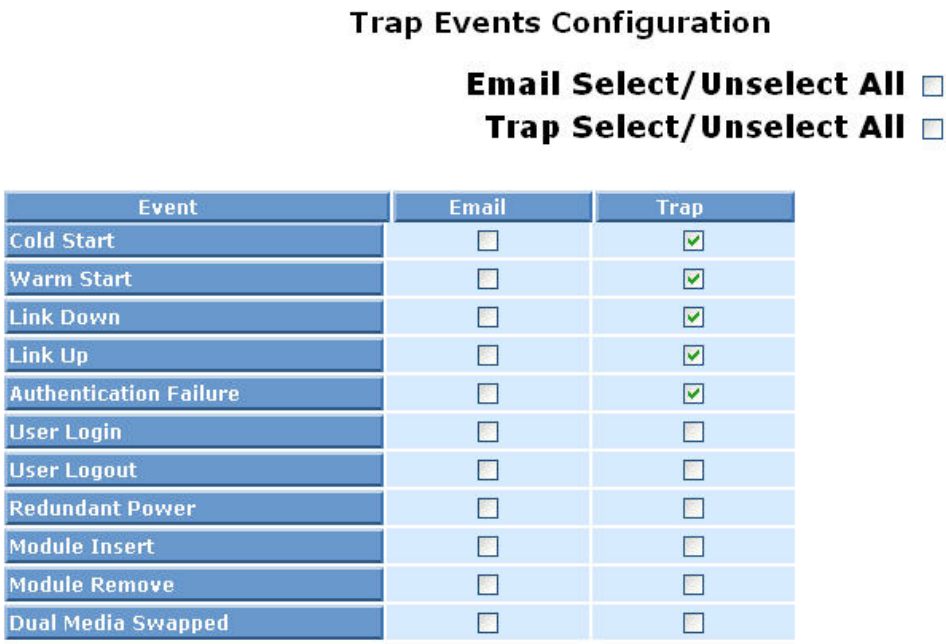


Fig. 3-27

Function name:

Email Configuration

Function description:

Alarm configuration is used to configure the persons who should receive the alarm message via either email. It depends on your settings. An email address has to be set in the web page of alarm configuration. Then, user can read the trap information from the email. This function provides 6 email addressesat most. The different trap events will be sent out to SNMP Manager when trap event occurs. After ticking trap events, you can fill in your desired email addresses. Then, please click **<Apply>** button to complete the alarm configuration. It will take effect in a few seconds.

Parameter description:

Email:

Mail Server: the IP address of the server transferring your email.

Username: your username on the mail server.

Password: your password on the mail server.

Email Address 1 – 6: email address that would like to receive the alarm message.

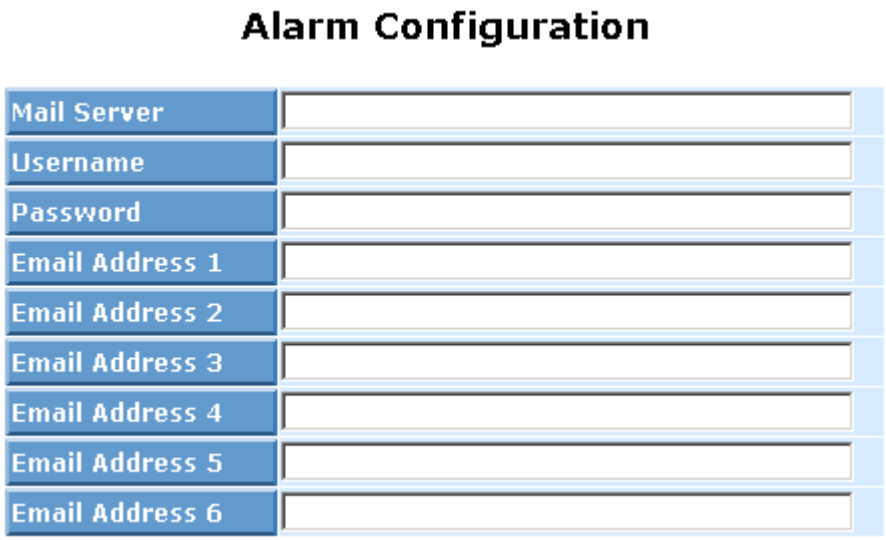


Fig. 3-28

3-18. Configuration

The switch supports three copies of configuration, including the default configuration, working configuration and user configuration for your configuration management. All of them are listed and described below respectively.

- **Default Configuration:**

This is the ex-factory setting and cannot be altered. In Web UI, two restore default functions are offered for the user to restore to the default setting of the switch. One is the function of “Restore Default Configuration included default IP address”, the IP address will restore to default “192.168.1.1” as you use it. The other is the function of “Restore Default Configuration without changing current IP address”; the IP address will keep the same one that you had saved before by performing this function.

- **Working Configuration:**

It is the configuration you are using currently and can be changed any time. The configurations you are using are saved into this configuration file. This is updated each time as you press <Apply> button.

- **User Configuration:**

It is the configuration file for the specified or backup purposes and can be updated while having confirmed the configuration. You can retrieve it by performing Restore User Configuration.

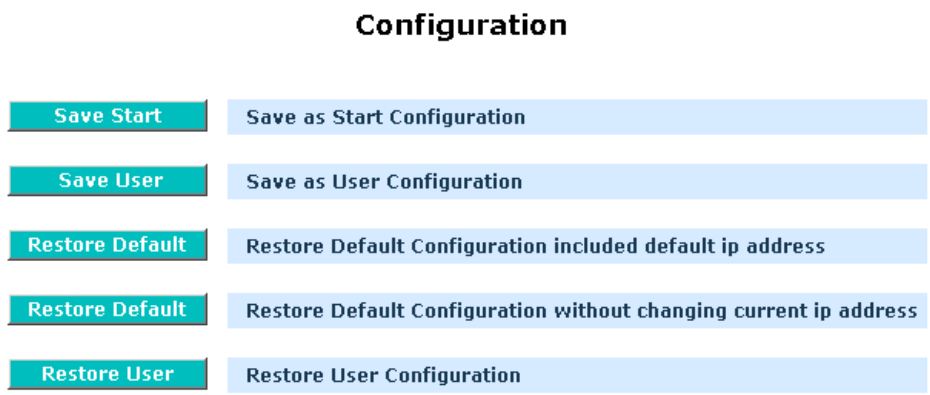


Fig. 3-29

Function name:

Save As Start Configuration

Function description:

Save the current configuration as a start configuration file in flash memory.

Function name:

Save As User Configuration

Function description:

Save the current configuration as a user configuration file in flash memory.

Function name:

Restore Default Configuration (includes default IP address)

Function description:

Restore Default Configuration function can retrieve the ex-factory setting to replace the start configuration. And the IP address of the switch will also be restored to 192.168.1.1.

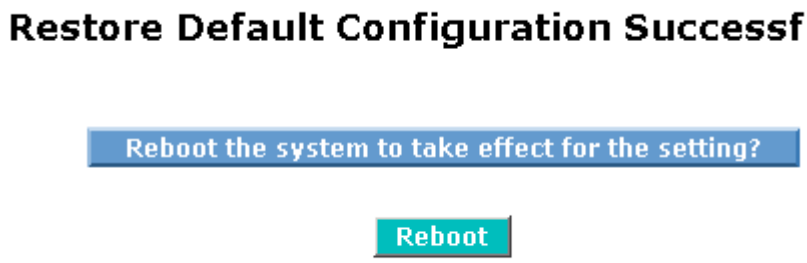


Fig. 3-30

Function name:

Restore Default Configuration (excludes current IP address)

Function description:

Restore Default Configuration function can retrieve the ex-factory setting to replace the start configuration. However, the switch's current IP address that the user set up will not be changed and will NOT be restored to 192.168.1.1 as well.

Function name:

Restore User Configuration

Function description:

Restore User Configuration function can retrieve the previous confirmed working configuration stored in the flash memory to update start configuration. When completing to restore the configuration, the system's start configuration is updated and will be changed its system settings after rebooting the system.

Function name:

Config File

Function description:

With this function, user can back up or reload the config files of Save As Start or Save As User via TFTP. To notice that after import config file, the original IP related setting won't be changed by config file. This feature is designed for preventing remote device loses control after import.

Parameter description:

Export File Path:

Export Start:

Export Save As Start's config file stored in the flash.

Export User-Conf:

Export Save As User's config file stored in the flash.

Import File Path:

Import Start:

Import Save As Start's config file stored in the flash.

Import User-Conf:

Import Save As User's config file stored in the flash.

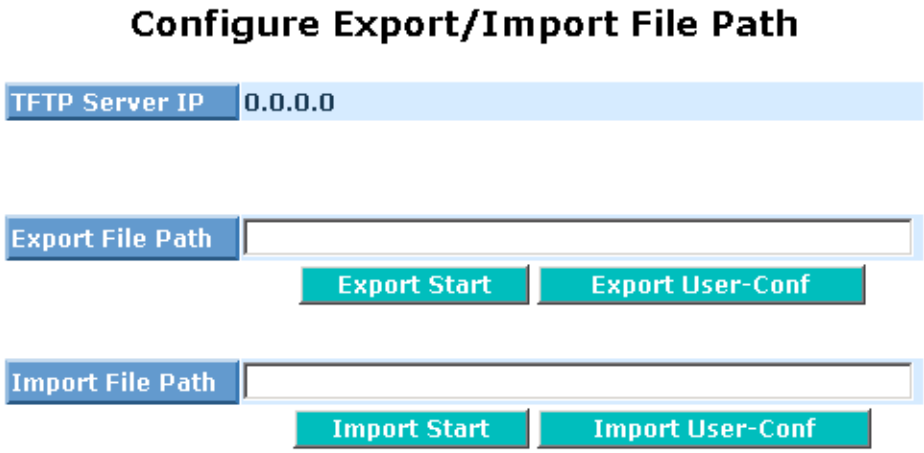


Fig. 3-31

3-19. Diagnostics

Three functions, including Diagnostics, Loopback Test and Ping Test are contained in this function folder for device self-diagnostics. Each of them will be described in detail orderly in the following sections.

Function name:

Diagnostics

Function description:

Diagnostics function provides a set of basic system diagnosis. It let users know that whether the system is health or needs to be fixed. The basic system check includes UART test, DRAM test and Flash test.

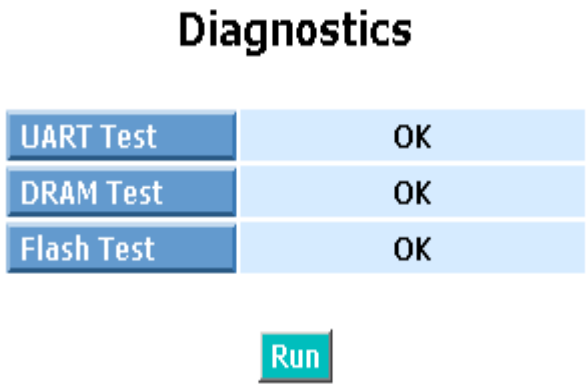


Fig. 3-32

Function name:

Loopback Test

Function description:

In the Loopback Test function, there are two different loopback tests. One is Internal Loopback Test and the other is External Loopback Test. The former test function will not send the test signal outside the switch box. The test signal only wraps around in the switch box. As to the latter test function, it will send the test signal to its link partner. If you do not have them connected to active network devices, i.e. the ports are link down, the switch will report the port numbers failed. If they all are ok, it just shows OK.

Note: Whatever you choose Internal Loopback Test or External Loopback Test, these two functions will interfere with the normal system working, and all packets in sending and receiving also will stop temporarily.

Fig. 3-33

Function name:

Ping Test

Function description:

Ping Test function is a tool for detecting if the target device is alive or not through ICMP protocol which abounds with report messages. The switch provides Ping Test function to let you know that if the target device is available or not. You can simply fill in a known IP address and then click <Ping> button. After a few seconds later, the switch will report you the pinged device is alive or dead in the field of Ping Result.

Parameter description:

IP Address:

An IP address with the version of v4, e.g. 192.168.1.1.

Default Gateway:

IP address of the default gateway.

For more details, please see the section of IP address in Chapter 2.

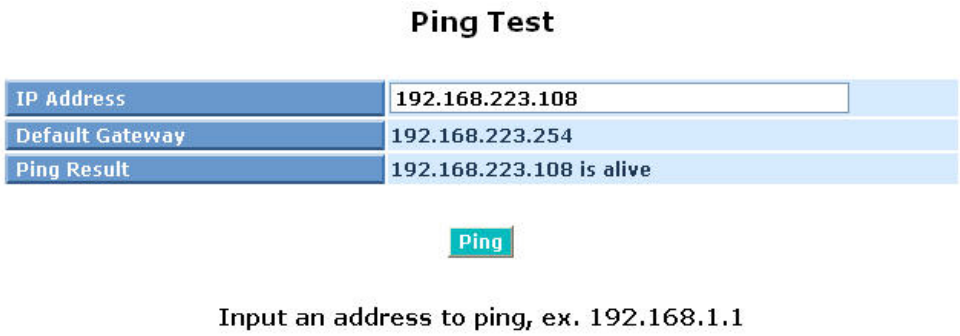


Fig. 3-34

3-20. TFTP Server

Function name:

TFTP Server

Function description:

Set up IP address of TFTP server.

Parameter description:

Specify the IP address where the TFTP server locates. Fill in the IP address of your TFTP server, then press **<Apply>** button to have the setting taken effect.

Fig. 3-35

3-21. Log

This function shows the log data. The switch provides system log data for users. The switch supports total 120 log entries. For more details on log items, please refer to the section of Trap/Alarm Configuration and SNMP Configuration.

Function name:

Log Data

Function description:

The Trap Log Data is displaying the log items including all SNMP Private Trap events, SNMP Public traps and user logs occurred in the system. In the report table, No., Time and Events are three fields contained in each trap record.

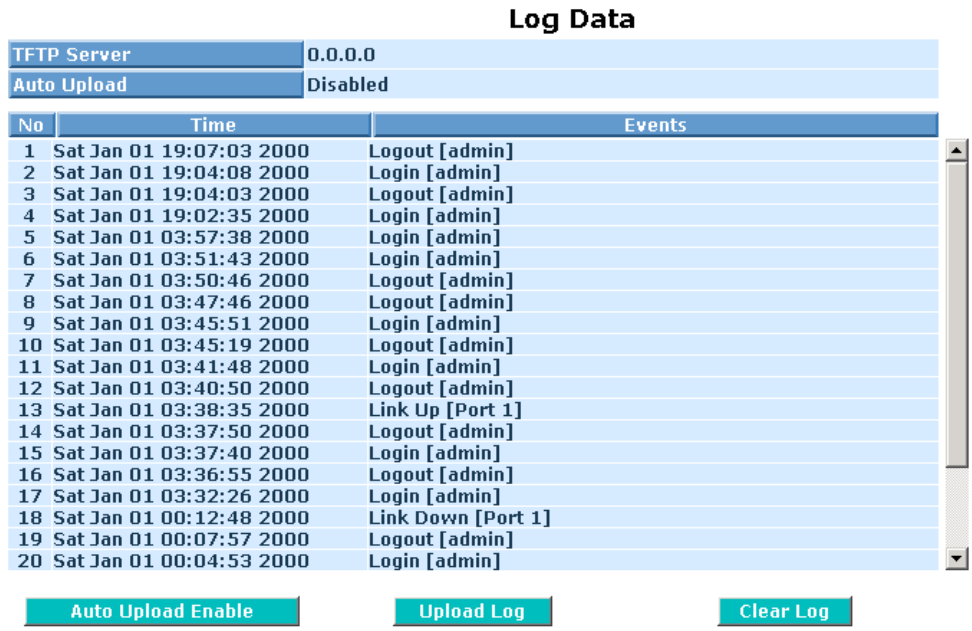

Log Data
TFTP Server
0.0.0.0
Auto Upload
Disabled
No
Time
Events
1 Sat Jan 01 19:07:03 2000 Logout [admin]
2 Sat Jan 01 19:04:08 2000 Login [admin]
3 Sat Jan 01 19:04:03 2000 Logout [admin]
4 Sat Jan 01 19:02:35 2000 Login [admin]
5 Sat Jan 01 03:57:38 2000 Login [admin]
6 Sat Jan 01 03:51:43 2000 Login [admin]
7 Sat Jan 01 03:50:46 2000 Logout [admin]
8 Sat Jan 01 03:47:46 2000 Logout [admin]
9 Sat Jan 01 03:45:51 2000 Login [admin]
10 Sat Jan 01 03:45:19 2000 Logout [admin]
11 Sat Jan 01 03:41:48 2000 Login [admin]
12 Sat Jan 01 03:40:50 2000 Logout [admin]
13 Sat Jan 01 03:38:35 2000 Link Up [Port 1]
14 Sat Jan 01 03:37:50 2000 Logout [admin]
15 Sat Jan 01 03:37:40 2000 Login [admin]
16 Sat Jan 01 03:36:55 2000 Logout [admin]
17 Sat Jan 01 03:32:26 2000 Login [admin]
18 Sat Jan 01 00:12:48 2000 Link Down [Port 1]
19 Sat Jan 01 00:07:57 2000 Logout [admin]
20 Sat Jan 01 00:04:53 2000 Login [admin]
Auto Upload Enable
Upload Log
Clear Log

Fig. 3-36

Parameter description:

No.:

Display the order number that the trap happened.

Time:

Display the time that the trap happened.

Events:

Display the trap event name.

Auto Upload Enable:

Switch the enabled or disabled status of the auto upload function.

Upload Log:

Upload log data through tftp.

Clear Log:

Clear log data.

3-22. Firmware Upgrade

Software upgrade tool is used to help upgrade the software function in order to fix or improve the function. The switch provides a TFTP client for software upgrade. This can be done through Ethernet.

Function name:

Firmware Upgrade

Function description:

The switch supports TFTP upgrade tool for upgrading software. If you assure to upgrade software to a newer version one, you must follow two procedures:

1.) Specifying the IP address where TFTP server locates. In this field, the IP address of your TFTP server should be filled in.

2.) Specifying what the filename and where the file is. You must specify full path and filename.

Then, press <Upgrade> button if your download is not successful, the switch will also be back to “Software Upgrade”, and it will not upgrade the software as well.

When download is completed, the switch starts upgrading software. A reboot message will be prompted after completing upgrading software. At this time, you must reboot the switch to have new software worked.

Note: Software upgrade is hazardous if power is off. You must do it carefully.

Parameter description:

TFTP Server: A TFTP server stored the image file you want to upgrade.

Path and Filename: File path and filename stored the image file you want to upgrade.

Note:
Your image file in the directory of c:\temp\test
You could type the directory of TFTP server " c:\ "
You have to type the "temp/test/firmware.img" into the upgrade field

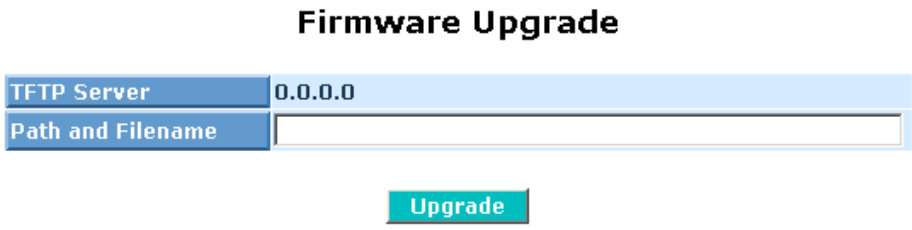


Fig. 3-37

3-23. Reboot

We offer you many ways to reboot the switch, including power up, hardware reset and software reset. You can press the RESET button in the front panel to reset the switch. After upgrading software, changing IP configuration or changing VLAN mode configuration, then you must reboot to have the new configuration taken effect. Here we are discussing is software reset for the “reboot” in the main menu.

Function name:

Reboot

Function description:

Reboot the switch. Reboot takes the same effect as the RESET button on the front panel of the switch. It will take around thirty (30) seconds to complete the system boot.

Parameter description:

Save and Reboot:

Save the current settings as start configuration before rebooting the switch.

Reboot:

Reboot the system directly.

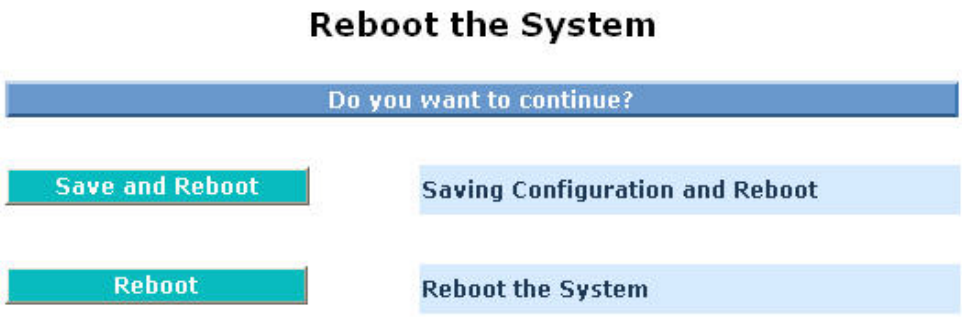


Fig. 3-38

3-24. Logout

You can manually logout by performing Logout function. In the switch, it provides another way to logout. You can configure it to logout automatically.

Function name:

Logout

Function description:

The switch allows you to logout the system to prevent other users from the system without the permission. If you do not logout and exit the browser, the switch will automatically have you logout. Besides this manually logout and implicit logout, you can pull down the <Auto Logout> list at the top-left corner to explicitly ON/OFF this logout function.

Parameter description:

Auto Logout:

Default is ON. If it is “ON”, and no action and no key is stroke as well in any function screen more than 3 minutes, the switch will have you logout automatically.

Fig. 3-39

4. Maintenance

4-1. Resolving No Link Conditions

The possible causes for a no link LED status are as follows:

- The attached device is not powered on
- The cable may not be the correct type or is faulty
- The installed building premise cable is faulty
- The port may be faulty

4-2. Q&A

1. Computer A can connect to Computer B, but cannot connect to Computer C through the MANAGED MEDIA CONVERTER Converter.
   - ✓ The network device of Computer C may fail to work. Please check the link/act status of Computer C on the LED indicator. Try another network device on this connection.
   - ✓ The network configuration of Computer C may be something wrong. Please verify the network configuration on Computer C.

2. The uplink connection function fails to work.
   - ✓ The connection ports on another must be connection ports. Please check if connection ports are used on that converter.
   - ✓ Please check the uplink setup of the MANAGED MEDIA CONVERTER Converter to verify the uplink function is enabled.

3. The console interface cannot appear on the console port connection.
   - ✓ The COM port default parameters are [Baud Rate: 57600, Data Bits: 8, Parity Bits: None, Stop Bit: 1, Flow Control: None]. Please check the COM port property in the terminal program. And if the parameters are changed, please set the COM configuration to the new setting.
   - ✓ Check the serial cable is connected well on the Console port of the MANAGED MEDIA CONVERTER Converter and COM port of PC.
   - ✓ Check if the COM of the PC is enabled.

4. How to configure the MANAGED MEDIA CONVERTER Converter?
   - ✓ The “Hyperterm” is the terminal program in Win95/98/NT. Users can also use any other terminal programs in Linux/Unix to configure the converter. Please refer to the user guide of that terminal program. But the COM port parameters (baud rate/ data bits/ parity bits/ flow control) must be the same as the setting of the console port of the MANAGED MEDIA CONVERTER Converter.

Appendix A
Technical Specifications

Features

- One 10/100/1000M UTP/SFP dual media port and one SFP fiber port, which is able to support kinds of fiber
- Embeds management information in the bit stream
- Ear Phone Jack for serial console port
- Physical media loop-back capability
- Dying Gasp function can send out an OAM packet, when detects the DC power down.
- LED display: Power, CPU/LOOP; UTP port: Act/Link, speed, duplex, Fiber port: Act/Link.
- External Power adapter, 5V, 2A
- Management :
  - Supports Embedded Web Server (HTTP 1.1) for Web-based management
  - Supports Embedded Telnet Server (RFC 1572, 854) for Telnet interface
  - Supports Serial CLI management
  - Supports SNMP V1/V2c (RFC 1157) for SNMP management
  - Supports SNMP standard Traps and Alarm
  - Supports E-mail client (SMTP RFC 821) for sending Traps and Alarm message
  - Be able to enable and disable any specific trap or alarm function
  - Supports DHCP (RFC 2131) Client and ICMP (RFC 792)
  - Supports MIB-II (RFC 1213), Private MIB
  - Supports Bandwidth rating management
  - Supports port enabled/disabled
  - Supports user login management
  - Supports TFTP (RFC 783) for on-line upgrade

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Revision A1

Hardware Specification

Physical Characteristics	
Ports	One 10/100/1000M RJ-45 UTP/SFP Dual Media port, One 1000M fiber port with SFP cage
Console Port	Serial console port (Ear Phone Jack)
Dimensions	23(W)*138(D)*87(H) mm
Input Power	5V +- 5%, 2A from external power adapter
Power Consumption	0.9A up @+5VDC, 4.5 Watts maximum
Flash	2M bytes
CPU Main Memory	16M bytes
MAC Address and Self-learning	8K
Packet Buffer Memory	Up to 256KB
Flow Control	Backpressure for half duplex, IEEE802.3x for full duplex
LED Display	PWR (Power), P2 SFP L/A (LINK/ACT), P1 SFP L/A (LINK/ACT), P1 TP L/A (LINK/ACT), P1 SPD (10/100/1000Mbps) P1 FDX/COL (Full-Duplex/Collision)
Management Support	
Management	In-Band : Web-Based, SNMP, Telnet; Out-Band : Serial Console
SNMP Management Agent	MIB II(RFC 1213),Private MIB
Software Upgrade	TFTP
Standards Conformance	
Environmental Temperature	Operating: 0 ~ 50°C, Storage: -20 ~ 70°C
Humidity	5% ~ 95%
Standards	IEEE802.3, IEEE802.3u, IEEE802.3x

Standard Network Connections

Twisted-Pair Port Interface	
▪ Connector	Shielded/Unshielded RJ-45, 8-pin jack
▪ Impedance	100 Ohms nominal
▪ Signal Level Output (differential)	0.95 to 1.05V (100Base-TX)
▪ Signal Level Input	350mV minimum (100Base-TX)
▪ Supported Link Length	100m
▪ Cable Type (10Mbps segments) (100Mbps segments) (1000Mbps segments)	Category 3, 4 or 5 UTP(100M) Category 5 UTP(100M) Category 5 or 6 UTP(100M)

SFP Transceiver Specification	
SFP.LC	1000Mbps LC, Multi-Mode, SFP Fiber transceiver
SFP.LC.S10	1000Mbps LC, 10km, SFP Fiber transceiver
SFP.LC.S30	1000Mbps LC, 30km, SFP Fiber transceiver
SFP.LC.S50	1000Mbps LC, 50km, SFP Fiber transceiver
SFP.BL5.S10	1000Mbps BiDi-LC, 10km, 1550nm SFP Fiber transceiver
SFP.BL3.S10	1000Mbps BiDi-LC, 10km, 1310nm SFP Fiber transceiver
SFP.BL5.S20	1000Mbps BiDi-LC, 20km, 1550nm SFP Fiber transceiver
SFP.BL3.S20	1000Mbps BiDi-LC, 20km, 1310nm SFP Fiber transceiver

Note: Any specification is subject to change without notice.

Data Transmission / Receiving Rate and Latency at wire speed

▪ Data Rate	1000Mbps half duplex (Gigabit Ethernet)
	2000Mbps full duplex (Gigabit Ethernet)
	100Mbps half duplex (Fast Ethernet)
	200Mbps full duplex (Fast Ethernet)
	10Mbps half duplex (Ethernet)
	20Mbps full duplex (Ethernet)
▪ Latency	< 5 µs (100Mbps 64 bytes input)
	< 11 µs (100Mbps 64 bytes input)
	< 71 µs (10Mbps 64 bytes input)

Power

▪ AC-DC Adapter Input	100-240VAC 50/60 Hz
▪ AC-DC Adapter Output	5V @ 1A above
▪ MANAGED MEDIA CONVERTER Power Consumption	5V @ 0.9Amps, 4.5W

Environment

▪ Operating Temperature	0° to 50° C
▪ Storage Temperature	-20° to 70° C
▪ Relative Humidity	5% to 95% non-condensing
▪ Physical Case	Fully enclosed metal construction
▪ Gross Weight	1Kg
▪ Vibration	Frequency: 5-55Hz Amplitude: 0.38mm Time: 3 hours

Regulatory

▪ Compliance	IEEE 802.3, IEEE802.3u
▪ Emissions	FCC Part 15 Class B and CE Mark

- *Ordering Information*

Model	Description
LC	10/100/1000Base-T/ SFP to SFP Gigabit Ethernet Converter Module, LC Multi-Mode, 850nm
LC.S10	10/100/1000Base-T/ SFP to SFP Gigabit Ethernet Converter Module, LC Single-Mode 10km, 1310nm
LC.S30	10/100/1000Base-T/ SFP to SFP Gigabit Ethernet Converter Module, LC Single-Mode 30km, 1310nm
LC.S50	10/100/1000Base-T/ SFP to SFP Gigabit Ethernet Converter Module, LC Single-Mode 50km, 1550nm
BL5.S10	10/100/1000Base-T/ SFP to SFP Gigabit Ethernet Converter Module, Bidi LC Single-Mode 10km, 1550nm
BL3.S10	10/100/1000Base-T/ SFP to SFP Gigabit Ethernet Converter Module, Bidi LC Single-Mode 10km, 1310nm
BL5.S20	10/100/1000Base-T/ SFP to SFP Gigabit Ethernet Converter Module, Bidi LC Single-Mode 20km, 1550nm
BL3.S20	10/100/1000Base-T/ SFP to SFP Gigabit Ethernet Converter Module, Bidi LC Single-Mode 20km, 1310nm

Note: One SFP transceiver is included with the model.